World Trade Center Attack Site

Recovery and Disposal of Hazardous Materials

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EPA EMERGENCY RESPONSE

Introduction

On September 11, 2001, a coordinated a terrorist attack on the United States caused the destruction of the twin towers of the World Trade Center in New York City.

- Monumental Damage and Staggering Loss of Life
  - 3,000 citizens
  - 400 first responders including firefighters, police officers, and other rescue workers
  - 8 buildings destroyed

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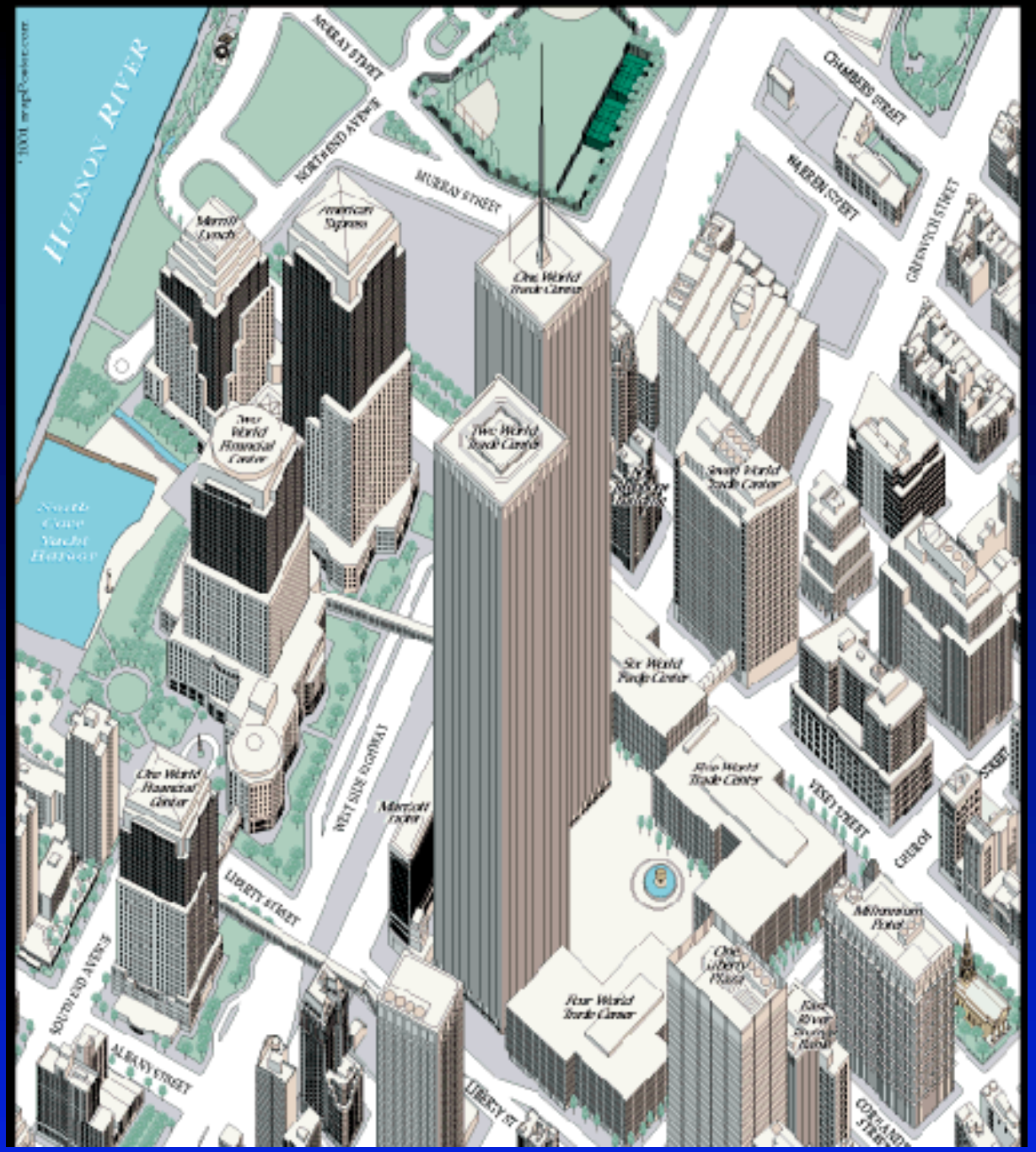
WTC Area prior to attack



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View from EPA R2 Offices

Photo taken by Ron Voelkel, RCRA Inspector,
from office window U.S. EPA-R2, September 11, 2001

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Initial rescue efforts

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Introduction

- President declared a national state of emergency
  - FEMA Activated
    - 12 subordinate government agencies, with Predesignated Emergency Support Functions (ESF)
      - Mission Assignments issued based on requests from state/local governments

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Introduction

- EPA's Predesignated Emergency Support Function, ESF 10:
  - Support effected state and local governments to respond to a release or threatened release of hazardous substances

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Outline

- Introduction
- Initial EPA Response
- Recovery/Disposal Strategy
- Recovery/Disposal Experience
  - Oil & Petroleum Materials
  - Chemicals
  - Pressurized Containers
- Summary

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Initial EPA Response

- R2 OSCs mobilized to the scene soon after the twin towers collapsed (within hours)
  - Initiated air monitoring
  - Set up mobile command post
  - Relayed information from the scene back to the EPA field office in Edison, NJ
    - R2 management personnel relocated to Edison
      - R2 NYC office was disabled
  - Equipped WTC rescue personnel
    - respirators, Tyvek® suits, & safety gloves

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Air Monitoring

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Initial EPA Response

- Developed and Initiated a Haz-Mat Retrieval/disposal Strategy
  - Responsive to the needs of New York City
    - Consultation with City and State Emergency Management personnel
  - Assisted by Region II OSCs, US Coast Guard Atlantic Strike Team, RCRA Inspectors, & OSCs/RPMs from other regions

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Initial EPA Response

- Determined EPA's Response Role to be:
  - Consistent with FEMA mission assignment
  - Retrieval and disposal of
    - Compressed gas cylinders
      - fire extinguishers
      - compressed air bottles
    - Drums
      - other non-pressurized chemical containers
    - Oil and other bulk petroleum products
      - underground storage tanks
      - oil releases

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Initial EPA Response

- Ground Zero Task Force
  - Disposal Group (DG)
    - Responsibilities
      - Finalizing the draft retrieval/disposal strategy
      - Determining staffing and equipment needs
      - Implementation of the strategy
    - Personnel
      - EPA personnel
        - OSCs, RPMs, RCRA Inspectors
      - Contractor personnel
        - Region II EPA Superfund removal program

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Initial EPA Response

- Ground Zero Task Force
  - Disposal Group (DG)
    - Procedures (Modified Superfund)
      - FEMA recovery mission not Superfund site
      - Compliance checks instead of detailed off-site compliance verifications
      - Shift coverage
        - Initial three 8-hour shifts with 2 OSCs, 7 days a week
        - Then two 12-hours shifts with two OSCs, 7 days a week
        - Finally, one 12-hour tour with two OSCs

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Night operations at Ground Zero

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Recovery/Disposal Strategy

- Initial Recovery Strategy
  - Problem
    - Difficult to access many areas of the 16 acre-wide debris pile (the Pile)
  - Solution
    - EPA notified when Recovery agencies encountered haz mats
      - access location
      - access haz mats
      - evaluate risks and removal tactics
      - extract haz mats
      - transport to a staging area away from the actual GZ

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Recovery/Disposal Strategy

- Initial Recovery Strategy
  - Haz Mat Staging
    - Chemical containers
      - downtown staging area
    - Compressed gas cylinders
      - restaged at a defunct City landfill, reopened solely to receive and process debris from GZ.
    - Bulk oil or other petroleum products
      - removed using a vac-truck
      - transported off-site for disposal, usually as a recyclable waste oil

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Recovery/Disposal Strategy

- Initial Recovery Strategy
  - Haz Mat Tracking
    - Assign each Haz Mat "item" unique tracking number
    - Disposal database
      - Category (cylinder, drum, battery, . . .)
      - Tracking number
      - Description of each item
      - Disposition of each item (e.g., disposal)
      - Gallons of petroleum pumped

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Recovery/Disposal Strategy

- Initial Recovery Strategy
  - Haz Mat Tracking
    - Disposal database (cont.)
      - Update every morning
        - provide management w/current totals for morning meetings/briefings
      - Ratio of items collected to items disposed
        - limit accumulation of Haz Mats

Recovery/Disposal Strategy

- Mature Recovery Strategy
  - Continued Haz Mat Tracking
  - Distributed Haz Mat handouts
    - Detailed EPA recovery/disposal capabilities
    - Provided EPA notification procedure
  - Response to requests for assistance from State and City agencies

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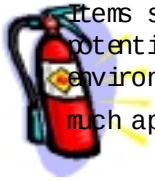
EPA Haz Mat handout & pickup

USEPA Hazardous Waste Disposal

The U.S. Environmental Protection Agency is supporting FEMA and the City of New York by participating in the recovery effort in the wake of the terrorist attack on the World Trade Center.

As part of it's mission, the USEPA is tasked with the retrieval and disposal of hazardous materials that were directly involved in the attack, including such things as containers of chemicals, oil, antifreeze or lubricants, compressed gas cylinders including propane, oxygen, nitrogen, and acetylene, fire extinguishers. The USEPA is prepared to respond to incidents involving leaking oil or chemical storage tanks damaged in the attack and which present a threat of leaking or are actively leaking.

The USEPA is operating out of a Command Post 24/7 in the large parking lot on the west corner of Murray and West Streets. In the event that your organization discovers any of the above items in or about the effected WTC buildings, you are strongly encouraged to call the special USEPA Spill Hotline at 203-627-9332 or the USEPA Murray Street Command Post at 212-608-7134, anytime day or night.



Items such as those described above present a potential danger to recovery workers and to the environment. Your cooperation in this effort is much appreciated and helps us help you.

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Recovery/Disposal Strategy

- Mature Recovery Strategy (cont.)
  - Direct EPA Haz Mat Search Operations
    - Debris pile rounds
    - Debris pile insertions
      - w/ FDNY or Port Authority police personnel
      - e.g., 80 feet below the remains of #2 Tower to locate an underground oil tank
    - Damaged building searches
      - chemical testing lab
      - subway platform maintenance room

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Recovery/Disposal Experience

- Oil & Petroleum Materials
  - WTC complex fuel oil tanks uncovered in debris piles
    - Vac trucks employed to remove product and transport it off-site for disposal
    - Difficulties in access
      - Health & safety issues
      - Head loss
        - pumping a thick #6 oil up a distance of 60 or 70 feet vertical and several hundred feet horizontally
        - double diaphragm pumps & vac trucks employed in series

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Recovery/Disposal Experience

- Oil & Petroleum Materials (cont.)
  - Oil-contaminated water (flooded basement areas)
    - Bankers Trust Plaza
      - Across the street from GZ
      - Flooded the elevator shafts & basement
        - displacing hydraulic fluid
        - accumulated more than 18 inches deep in the basement
      - Recovery personnel needed service elevator
      - Results
        - two tries (fire & falling debris canceled 1st)
        - 300,000 gallons of contaminated water pumped to a portable fractionation tank (combined sewer/bulked out)

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Recovery/Disposal Experience

- Oil & Petroleum Materials (cont.)
  - Oil-contaminated water (flooded basement areas)
    - WTC complex underground vault
      - ~$400 million in bullion
      - Only access thru underground service road
        - blocked by tons of mud (concrete dust and firewater)
        - contaminated with petroleum product (crushed cars)
      - Results
        - vertical pump-out--failed
        - vac truck staged underground--succeeded
        - bullion was successfully recovered by Port Authority
        - EPA also removed 200 gallons of oil-based paint and 1,000 live rounds of .38 (pistol) & .223 (M16) caliber ammo from area

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Recovery/Disposal Experience

- Oil & Petroleum Materials (cont.)
  - PCB-contaminated oily water
    - Con-Edison and Verizon excavations
      - Repairing damaged or destroyed utility and phone lines
      - Seepage of large volumes of oily material into trenches
      - EPA was asked by the NY State DEC to assist
      - Results
        - deployed two 20,000-gallon portable fractionation tanks
        - pumped water and oil separated
        - water discharged directly into the combined storm sewer
        - oil phase (hundreds of gallons, PCBs ~1 ppm) was pumped into a vac truck for recycling

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Recovery/Disposal Experience

- Chemicals
  - Chemical container retrieval difficulties
    - Discovery
      - environmental databases (e.g., RCRIS)
      - operator interviews
      - RTK disclosures
      - direct observation
    - Access
      - rubble (tangled re-bar, distorted beams, and shattered concrete)

Recovery/Disposal Experience

- Chemicals
  - Chemical container retrieval difficulties (cont.)
    - Identification
      - partially or completely obliterated markings
    - Removal
      - debris removal
        - often by hand
      - extraction

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Recovery/Disposal Experience

- Chemicals (cont.)
  - Gasoline and diesel fuel cans
    - FDNY asked EPA to accept & dispose of gasoline and diesel fuel cans
    - FDNY was confiscating them daily
      - illegal (in NYC)
    - EPA has accepted hundreds of fuel cans and more than 1,000 gallons of various fuels that presented a fire or spillage risk

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Recovery/Disposal Experience

- Chemicals (cont.)
  - Recovery/Disposal case studies
    - #1 WTC hazardous waste storage area located under debris pile
      - Storage included
        - drums of PCB-containing ballasts
        - drums of waste oil and solvents
      - Further tons of debris were removed to access this area
      - drums removed by lifting them out in a welder's basket attached to a crane

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Recovery/Disposal Experience

- Chemicals (cont.)
  - Recovery/Disposal case studies
    - Marriott Vista Hotel, #3 WTC
      - EPA located remains of the hotel's laundry room
        - dry cleaning machine
        - drums of cleaning & conditioning chemicals
      - Briefed demolition contractors
      - EPA contacted hotel laundry manager--dry cleaning machine contained ~60 gal of perchloroethylene

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Recovery/Disposal Experience

- Chemicals (cont.)
  - ► Recovery/Disposal case studies
    - – Marriott Vista Hotel, #3 WTC (cont.)
      - Obtained the assistance of a representative from the company that made the machine
      - Had the machine lifted to a work area
        - EPA was able to recover almost 75 gallons of perc, as well as a number of compressed gas cylinders and some drums of cleaning chemicals
      - Later, EPA recovered & over-packed 28 more drums of solvent-based odorants, hydrogen peroxide, & caustic cleaners
        - chemicals returned to manufacturer

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Recovery/Disposal Experience

- Pressurized Containers
  - Gas cylinders, SCBA air bottles, propane tanks, & fire extinguisher
  - Pressurized Container retrieval concerns
    - Gas cylinders often indistinguishable from debris
      - all debris coated/colored gray
      - shape common to piping
    - SCBA air bottles and fire extinguishers were found that had been carried by missing firemen

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Recovery/Disposal Experience

- Pressurized Containers
  - ► Disposition
    - – Staged in a waste holding area
    - – Logged in disposal database
    - – Disposed or returned
      - • Cylinders with legible names of suppliers were set aside for retrieval by suppliers

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Recovery/Disposal Experience

- Pressurized Containers
  - Disposed or returned (cont.)
    - Cylinders without names of suppliers were transported to Freshkills Landfill
      - known oxygen, carbon dioxide, acetylene or propane were vented at the landfill
      - empty metal cylinders of all kinds were cut in half and sent to recycling companies
      - empty fiberglass or composite air bottles were cut in half and disposed of as municipal refuse
      - cylinders from unknown suppliers and with unknown contents are still being staged at the landfill pending a decision on ultimate disposal

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Summary

- EPA's Ground Zero recovery effort presented enormous challenges to the skill and training of EPA personnel
- EPA was able to implement an effective and efficient strategy to deal with hazardous substances and hazardous waste using methodology proved on hundreds of Superfund sites
  - EPA has managed the retrieval of: *
    - 1,852 pressurized cylinders
    - 502 containers of chemicals and fuel
    - Pumped out 615,000 gallons of petroleum and contaminated water
    - 69 lead-acid batteries
  - These numbers will climb as the EPA hazardous materials recovery effort continues

* As of 12 Jan 2002

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Summary

- In Closing
  - These accomplishments could not have been realized without the cooperation and assistance of numerous EPA program offices and staff, the cooperation of union personnel working at GZ, various agencies of the City of New York and the State of New York, and of course the help and inspiration on the part of the men and women of the New York City Fire and Police Departments with whom we were honored to work close to, and see in action, first hand, at Ground Zero.

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